

# INDUSTRIAL EXPERIENCE

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## DOMESTIC TECHNOLOGIES, MATERIALS, AND EQUIPMENT FOR DECORATIVE COATINGS

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Methods for the application of decorative coatings to bottles are described. Possibilities of servicing customers are shown, using decoration of bottles as an example.

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The problems of enlarging product ranges and improving the quality and aesthetics of products are constant challenges. These problems can be solved not only by developing new types of glass products (which is a costly and time-consuming process) but also by decorating products using various technologies.

The Experimental glass factory that is part of the Stekloholding Joint-Stock Company has a decoration division that develops new types of decorative coatings and relevant technologies and equipment and produces decorated glass products. Most of the wide range of household glass products manufactured at the factory are subjected to decoration. The division also fulfills orders for exclusive glass articles, including household glass and container, construction, and illumination engineering glass.

Numerous producers, especially those using glass containers, wish to produce competitive products protected from counterfeiting. To satisfy this demand, we have developed and extensively use a glass frosting technology based on inorganic compounds. This surface treatment can be done in different variants (by the customer's request): from a silky to a rough coating, from translucent to saturated color.

For more than four years, the "Topaz" vodka and liquor factory is our stable consumer who contracts up to 250,000 exclusive bottles per month at the Krasnoe Ékho glass factory and orders their frosting performed at the Experimental glass factory. "Saproshein" vodka, which is a well-known brand of the Topaz factory, is marketed in an elegant glass bottle developed and decorated at the Stekloholding JSC enterprises.

For the decoration of "shtof" decanters manufactured on the Krasnoe Ékho production lines, special glossy and

dull color compositions were developed in addition to frosting. A multifaceted cap and special protective elements applied in the course of decoration impart an elegant and modern appearance to the "shtof" decanter.

A new line in our development activities is known as "velvety decoration." By a contract with the Golden Standard Company, we developed red and black varieties of velvety ornamentation for green champagne bottles. The Experimental glass factory and the Krasnoe Ékho Works together with the Oilpenta Company developed and produced an original velvety decorative design for "Black Monk" 0.7-liter wine bottles. The specific features of these bottles include its unique asymmetrical shape and the dull "velvety" decoration.

Another line in decoration is silk-screen printing on bottles using cold and hot printing (thermoplastic printing) and decalcomania for treatment of complex-shaped articles.

The use of computer design in decorating technology makes it possible to respond promptly to customers' requirements and fulfill exclusive orders on short notice and at a high level of quality, i.e., design the pattern, select the color scheme, carry out color separation, develop slides and install them, and, if necessary, introduce the needed corrections and adjustments.

Our company has fulfilled exclusive orders for special multicolored decanters for the presentation of the capital of Kazakhstan and for Vetluga and Veliky Ustyug vodka and liqueur factories and wine bottles for Vladimir, Sarapul, and Shatsk vodka and liquor factories, Rosinka Company in Lipetsk, and many others.

The Experimental glass factory possesses formulas, materials, technologies, semimechanized equipment for cold printing, and a semiautomatic line for three-color printing using thermoplastic inks. The color range of available colorants is extensive, including semitones. Pigment compositions are

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based on light-melting glasses (fluxes) melted in a lining slag furnace, with subsequent granulation and dry fine milling in an air-jet mill. The colorant compositions are prepared at a production site that contains equipment for drying, sifting, mixing, and stabilization. At all stages of the process, the quality of the pigments is monitored, and the main parameters are determined: granulometric composition, spreadability, softening point, viscosity, etc.

The main advantage of our pigment compositions consists in using domestic raw materials that are chosen for good quality and relatively low prices. Furthermore, the compositions and technologies we develop, together with the available firing equipment, make it possible to use the method of combined decoration, i.e., it is possible to apply a pattern to a glass product using silk-screen or decal printing and simultaneously apply frosting, using various compositions, with subsequent fixing of the decorative pattern in the course of one-time heat treatment, which contributes to good economic parameters and makes it possible to lower the production costs.

The one-time firing technology for multicompositional coatings has attracted the interest of foreign companies. These formulas and the technology are proprietary for our company. The developed coatings have high strength parameters and hygienic and other required certificates.

New varieties of decorations developed by us were exhibited at the International exhibition: "Porcelain. Ceramics. Glass – 2000" and attracted the attention of many visitors.

The Experimental glass factory is going to be reconstructed in order to substantially increase the amount of decorated glass products. The decorating division will be expanded, and new highly efficient imported machinery will be purchased.

The available professional and research base in combination with the professional training system will make it possible to expand our product range and develop new decorative technologies not only for the Stekloholding JSC enterprises, but also to be offered as "turn-key" projects to potential customers.